

FORM PTO-1390 (Modified) U.S. PATENT AND TRADEMARK OFFICE; U.S. DEPARTMENT OF COMMERCE  
(REV. 12-2004)

**TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A SUBMISSION UNDER 35 U.S.C. 371**

ATTORNEY'S DOCKET NUMBER

873.0115.U1(US)

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

**10/523167**INTERNATIONAL APPLICATION NO.  
PCT/IB2003/002088INTERNATIONAL FILING DATE  
29 May 2003PRIORITY DATE CLAIMED  
1 July 2002

## TITLE OF INVENTION

Method and Apparatus to Establish Constellations for Imperfect Channel State Information At a Receiver

## APPLICANT(S) FOR DO/EO/US

Mohammad Jaber BORRAN; Ashutosh SABHARWAL; Behnaam AAZHANG

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

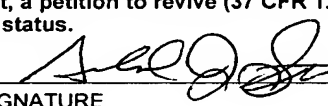
1. ☒ This is a **FIRST** submission of items concerning a submission under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a submission under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☐ The US has been elected (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c)(2))
  - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ has been communicated by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
  - a. ☐ is attached hereto.
  - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
  - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ have been communicated by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

## Items 13 to 23 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☐ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A power of attorney and/or change of address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 37 CFR 1.821 - 1.825.
20. ☐ A second copy of the published International Application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the International Application under 35 U.S.C. 154(d)(4).
22. ☒ Express Mail Label No. EV 552 120 237 US
23. ☒ Other items or information:

Petition to Revive an Unintentionally Abandoned International Patent Application and Form PTO/SB/64

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

U.S. APPLICATION NO (if known, see 37 CFR 1.5) <b>10/523167</b>		INTERNATIONAL APPLICATION NO. <b>PCT/IB2003/002088</b>		ATTORNEY'S DOCKET NUMBER <b>873.0115.U1(US)</b>		
24. The following fees are submitted:				Applicant use	Office use	
<input checked="" type="checkbox"/> a) Basic national fee ..... \$300.00				\$ 300.00		
<input checked="" type="checkbox"/> b) Examination fee ..... \$200.00				\$ 200.00		
<input checked="" type="checkbox"/> c) Search fee ..... \$500.00				\$ 500.00		
<b>TOTAL OF ABOVE CALCULATIONS = \$1000.00</b>				<b>\$ 1,000.00</b>		
<input type="checkbox"/> Additional fee for specification and drawings filed in paper over 100 sheets (excluding sequence listing or computer program listing filed in an electronic medium). The fee is \$250 for each additional 50 sheets of paper or fraction thereof.						
Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof (round up to a whole)	RATE			
- 100 =	/50 =		x \$250.00	\$ 0.00		
Surcharge of \$130.00 for furnishing the oath or declaration later than months from the earliest claimed priority date (37 CFR 1.492(e)).				\$		
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE			
Total claims	25 - 20 =	5	x \$50.00	\$ 250.00		
Independent claims	7 - 3 =	4	x \$200.00	\$ 800.00		
MULTIPLE DEPENDENT CLAIMS (if applicable) <input type="checkbox"/> + \$360.00				\$ 0.00		
<b>TOTAL OF ABOVE CALCULATIONS =</b>				<b>\$ 2,050.00</b>		
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$ 0.00		
<b>SUBTOTAL =</b>				<b>\$ 2,050.00</b>		
Processing fee of \$130.00 for furnishing the English translation later than 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$ 0.00		
<b>TOTAL NATIONAL FEE =</b>				<b>\$ 2,050.00</b>		
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40 per property +				\$ 0.00		
<b>TOTAL FEES ENCLOSED =</b>				<b>\$ 2,050.00</b>		
Amount to be refunded:				\$		
Amount to be charged:				\$		
a. <input checked="" type="checkbox"/> A check in the amount of \$ <b>2,050.00</b> to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is _____ c. <input checked="" type="checkbox"/> The Director is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <b>50-1924</b> . A duplicate copy of this sheet is enclosed. d. <input type="checkbox"/> Fees are to be charged to a credit card. <b>WARNING:</b> Information on this form may become public. <b>Credit card information should not be included on this form.</b> Provide credit card information and authorization on PTO-2038.						
NOTE: Where an appropriate time limit under 37 CFR 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the International Application to pending status.						
SEND ALL CORRESPONDENCE TO: Harrington & Smith, LLP 4 Research Drive Shelton, CT 06484-6212 (203) 925-9400 Customer No. 29683						
				 SIGNATURE		
				<b>Gerald J. Stanton</b> NAME		
				<b>46,008</b> REGISTRATION NUMBER		

## IN THE U.S. PATENT AND TRADEMARK OFFICE

In re U.S. Patent Application of:

Applicant: Borran et al.

U.S. Serial No.:

International Application No.: PCT/IB2003/002088

International Filing Date: 29 May 2003

Title: Method and Apparatus to Establish Constellations for Imperfect Channel  
State Information at a Receiver

Attorney Docket No.: 873.0115.U1(US)

Certificate of Mailing

I hereby certify that the following correspondence:

Petition to Revive an Unintentionally Abandoned International Patent Application

And Form PTO/SB/64

Transmittal Letter to U.S. Designated/Elected Office

WO 2004/004172 A1 published application

Information Disclosure Statement with PTO-1449

International Search Report

International Preliminary Examination Report

Check for \$ 3550.00

Self addressed stamped post card

Is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, Mail Stop PCT.

Date:

1/27/05

  
Cathy Raetz